

CIRCUIT FOR PERFORMING EXTERNAL PACING AND BIPHASIC DEFIBRILLATION

Abstract

10 An external defibrillator/pacer (8) includes an output circuit (14) with four
legs arrayed to form an H-bridge. Each leg of the output circuit contains a
switch (SW1-SW4). In a defibrillation mode, pairs of switches in the H-bridge are
selectively switched to generate a biphasic defibrillation pulse. Three switches (SW1,
SW3, SW4) are silicon controlled rectifiers (SCRs). Gate drive circuits (51, 53, 54)
are coupled to the SCRs to bias the SCRs with a voltage that allows the SCRs in
15 response to control signals. One switch (SW2) includes an insulated gate bipolar
transistor (IGBT). A gate drive circuit (52) is coupled to the gate of the IGBTs to
provide a slow turn-on and a fast turn-off of the IGBT. In a pacing mode, a bypass
circuit or current source circuit is used to provide a current path bypassing an SCR
switch (SW3), which cannot be triggered by the relatively low current of pacing
pulses. One of the SCRs (SW4) may be replaced with an IGBT to allow generation
of the pacing pulse with opposite polarity of the first phase of the defibrillation pulse.